

1. A method of forming a fastener product having a multiplicity of fastener elements extending from a strip-form base, the base including first and second attachment members for attachment of a substrate therebetween, the method comprising:

continuously introducing molten resin to a gap defined adjacent a peripheral surface
5 of a rotating mold roll, such that the resin forms part of the strip-form base of the product at the peripheral mold roll surface and fills an array of fixed cavities defined in the rotating mold roll to form portions of the fastener elements as projections extending from a first side of the sheet-form base; while

introducing to the resin on the mold roll a sheet material folded about a longitudinal
10 fold line to form first and second overlapping fold portions, the sheet material introduced under conditions selected to cause the second fold portion to become permanently bonded to resin of the base, while leaving the first fold portion free to be subsequently unfolded from said second fold portion about said fold line;

solidifying the resin; and

15 stripping the solidified resin from the peripheral surface of the mold roll by pulling the projections from their respective cavities.

2. The method of claim 1 in which the folded material is folded about multiple fold lines separating more than two fold members.

20 3. The method of claim 1 in which said second fold portion is bonded to the first side of the base from which the fastener elements extend.

25 4. The method of claim 1 in which said second fold portion is bonded to a second side of the base opposite the first side from which the fastener elements extend.

5. A method of forming a fastening assembly comprising:

molding a continuous sheet-form base having a multiplicity of fastener elements integrally molded with and extending from a fastening section of a surface of the base lying
30 generally in a plane, the base, as molded, having a non-planar undulation in which the base extends out of its plane to form a peak that extends along a longitudinal direction of said base with opposite major surfaces of the base remaining generally parallel, the undulation being

elastically deformable to enable said base to stretch laterally upon application of a lateral tensile force to the fastener product.

6. The method of claim 5, wherein the base, as molded, has multiple, parallel
5 undulations, each undulation forming a peak.

7. The method of claim 6, wherein said undulations are disposed in a region adjacent said fastener elements.

10 8. The method of claim 6, wherein said undulations are molded integrally with the fastener section.

9. The method of claim 5 in which the undulation is formed by a mating groove and channel of a pair of rolls defining a nip in which the base is formed.
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10. The method of claim 5 in which the undulation is pre-formed on a material that is introduced into a base forming nip formed by a pair of rolls, the rolls having a mating groove and channel that accommodate the undulation.

20 11. The method of claim 5 further comprising coating the undulation with an elastomer.

12. The method of claim 6 further comprising filling an area between adjacent peaks with an elastomer.
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13. The method of claim 11 in which the elastomer is selected from the group consisting of thermoplastic elastomers, thermoplastic polyurethanes, elastomeric copolymers containing polyethylene terephthalate PET, thermoplastic olefins, and natural or synthetic rubber.
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14. The method of claims 5 in which the fastener section is molded of resin selected from the group consisting of polyester, polyethylene, polypropylene, polyamide and copolymers and alloys thereof.

5 15. The method of claim 5 further comprising forming a tab joined with said base, the tab extending laterally from the undulation along a lateral margin of the fastener assembly opposite a second lateral margin more nearly adjacent the fastening section, the tab comprising at least one flap for joining the fastener assembly to an article.

10 16. The method of claim 15 in which the flap is formed of a section of the base molded integrally with and of the same resin as the portion having the undulation and the fastening section.

15 17. The method of claim 15 in which the flap is formed by folding and permanently joining a portion of said base to another portion of said base.

 18. The method of claim 16 in which the portion of the base that is folded is thinner than other portions of the base.

20 19. The method of claim 15 in which the tab is formed by introducing a sheet material into a nip in which the base is molded, the sheet material being folded about a longitudinal fold line to form first and second overlapping fold portions and introduced under conditions selected to cause the second fold portion to become permanently bonded to resin of the base, while leaving the first fold portion free to be subsequently unfolded from said
25 second fold portion about said fold line.

 20. The method of claim 19 in which the sheet material is bonded to a surface of the base opposite the first surface from which the fastener elements extend.

30 21. The method of claim 19 in which the sheet material is bonded to said first surface of the base from which the fastener elements extend.

22. The method of claim 19 in which said second fold portion is bonded to the base only along a margin area of an exposed surface of said second fold portion.

23. The method of claim 22 in which unbonded surface areas of said first and second
5 fold portions are protected from contact with the resin by a protective tape forming a barrier to the resin.

24. The method of claim 22 in which unbonded surface areas of said first and second
10 fold portions are protected from contact with the resin by a protective coating forming a barrier to the resin.

25. The method of claim 5 further comprising forming dams along edges of the fastening section.

15 26. The method of claim 25 in which the dams are higher than said fastener elements.

27. The method of claim 17 in which the step of permanently joining is achieved by heat-staking together said portion of said base to said another portion of said base.

20 28. The method of claim 17 in which the step of permanently joining is achieved by rf-welding together said portion of said base to said another portion of said base.

25 29. The method of claim 17 in which the step of permanently joining is achieved by use of adhesive to join said portion of said base to said another portion of said base.

30. A method of forming fastener tabs, each tab comprising a multiplicity of fastener elements extending from a strip-form base and first and second attachment legs for attaching the tab to a garment or substrate therebetween, the method comprising:

continuously introducing molten resin to a gap defined adjacent a peripheral surface
30 of a rotating mold roll, such that the resin forms at least a part of the strip-form base of the product at the peripheral mold roll surface and fills an array of fixed cavities defined in the

rotating mold roll to form portions of the fastener elements as projections extending from a first side of the sheet-form base; while

introducing a pre-formed material to the resin under conditions selected to cause a portion of the resin to become permanently bonded to the pre-formed material, the preformed

5 material forming at least a part of the strip-form base of the product;

solidifying the resin;

stripping the solidified resin from the peripheral surface of the mold roll by pulling the projections from their respective cavities; and

folding a portion of the strip-form base to form said first and second attachment legs.

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31. A method of forming fastener tabs, each tab comprising a multiplicity of fastener elements extending from a strip-form base and first and second attachment legs for attaching the tab to a garment or substrate therebetween, the method comprising:

15 continuously introducing molten resin to a gap defined adjacent a peripheral surface of a rotating mold roll, such that the resin forms at least a part of the strip-form base of the product at the peripheral mold roll surface and fills an array of cavities defined in the rotating mold roll to form portions of the fastener elements as projections extending from a first side of the sheet-form base;

solidifying the resin;

20 stripping the solidified resin from the peripheral surface of the mold roll by pulling the projections from their respective cavities; and

folding a portion of the strip-form base to form said first and second attachment legs.

32. A fastening assembly comprising:

25 a multiplicity of fastener elements integrally molded with and extending from a first surface of a sheet-form base to form a fastening section of the fastening assembly; and

a spring section integrally molded with and extending laterally from said fastening section, the spring section formed by at least one undulation of the sheet form base that allows the spring section to stretch elastically in a lateral direction upon application of lateral
30 tension to the fastening assembly.

33. The fastening assembly of claim 32 wherein the undulation is coated with an elastomeric resin.

34. The fastening assembly of claim 32 wherein the undulation is triangular.

35. The fastening assembly of claim 32 wherein the undulation is sinusoidal.

36. The fastening assembly of claim 32 further comprising a tab section having a first and a second attachment leg.

37. A fastener tab comprising:

a continuous, unitary strip of thermoplastic resin having first and second end regions;

a multiplicity of fastener elements, each having a stem integrally molded with and extending from a surface of the unitary strip disposed in the first end region; and

the second end region having two opposable leg portions formed integrally with and of the same material as the continuous strip, the two opposable leg portions positioned to be secured to oppositely directed faces of a substrate or article to support the tab in a manner that the first end may be free to enable its fastener elements to engage a mating surface.

38. The fastener tab of claim 37 in which the leg portions extend from a common hinge region.

39. The fastener tab of claim 37 in which the strip of thermoplastic resin has a longitudinal profile configured to define at least one hinge region.

40. The fastener tab of claim 39 in which the hinge region is defined by a localized reduction in thickness of the strip of thermoplastic resin.

41. The fastener tab of claim 37 in which portions of the strip of thermoplastic resin are folded together and permanently joined to define the two leg portions.

42. The fastener tab of claim 40 in which the continuous strip of thermoplastic resin has at least two spaced apart localized lines of reduced thickness extending longitudinally across the strip to define two hinge regions about which adjacent portions of the strip are folded to constitute the leg portions.

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43. The fastener tab of claim 42 in which the strip, as initially formed, has a substantially longitudinal straight profile with a first hinge region spaced from its adjacent end a first distance and a second hinge region spaced from said end a substantially greater distance, the strip having been bent back upon itself about said second hinge, the bent back portion being permanently joined to the remainder of the strip adjacent to the first hinge region, the outer portion of the strip being free to bend about said first hinge to form an attachment jaw for receiving therebetween a substrate or article to which the oppositely directed surfaces of the respective leg portions may be joined.

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44. The fastener tab of claim 43, wherein the bent back portion is permanently joined to the remainder of the strip by adhesive.

45. The fastener tab of claim 43, wherein the bent back portion is permanently joined to the remainder of the strip by ultrasonic bonding.

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46. The fastener tab of claim 43, wherein the bent back portion is permanently joined to the remainder of the strip by heat staking.

47. A fastener tab comprising:

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a strip form, unitary body consisting essentially of a contiguous resin, the body having a first end and a second end, hooks in a first end region, and two opposable legs in a second end region spaced apart from the hooks for mounting the fastener tab to opposite sides of a substrate.

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48. The fastener tab of claim 47 wherein the second end region includes a first portion, a second portion, and a hinge therebetween.

49. The fastener tab of claim 48 wherein the second end region is folded about said hinge to overlap the first portion and the second portion.

50. The fastener tab of claim 49 further comprising adhesive joining the overlapped
5 first and second portions.

51. The fastener tab of claim 49 further comprising an ultrasonic weld joining the overlapped first and second portions.

10 52. The fastener tab of claim 49 further comprising a heat staked joint joining the overlapped first and second portions.

15 53. The fastener tab of claim 48 wherein the hinge is defined by a section of decreased thickness.

54. The fastener tab of claim 48 wherein the second region further comprises a third portion and a second hinge between the second portion and the third portion.

20 55. The fastener tab of claim 48 wherein the first portion extends generally in a plane defined by the first end region, and the second portion is folded back over the first portion.

56. The fastener tab of claim 48 wherein the first portion extends out of a plane defined by the first end region, and the second portion is folded back over the first portion.

25 57. The fastener tab of claim 47 wherein one of the two opposable legs comprises an integrally molded portion extending out of a plane defined by the first end region.

30 58. The fastener tab of claim 47 wherein the second end region includes a first portion extending generally in a plane defined by the first end region, a second portion folded back over the first portion, and a third portion folded back over the second portion.

59. The fastener tab of claim 58 wherein the second portion forms a first of the two opposable legs, and the third portion forms a second of the two opposable legs.

60. The fastener tab of claim 59 wherein the first and second portions are
5 permanently joined by one of adhesive, heat staking, and ultrasonic welding.

61. The fastener tab of claim 59 wherein the body defines a hinge located between the first portion and the second portion.

10 62. The fastener tab of claim 59 wherein the body defines a hinge located between the second portion and the third portion.

63. The fastener tab of claim 47 wherein the second end region includes a first portion extending out of a plane defined by the first end region, a second portion folded back
15 over the first portion, and a third portion extending generally in the plane defined by the first end region.

64. The fastener tab of claim 63 wherein the third portion forms a first of the two opposed legs, and the second portion forms a second of the two opposed legs.

20 65. The fastener tab of claim 62 wherein the first and second portions are permanently joined by one of adhesive, heat staking, and ultrasonic welding.

66. The fastener tab of claim 47 wherein each of the two opposed legs has an inner
25 facing surface including an adhesive.

66. The fastener tab of claim 65 wherein the adhesive comprises a pressure sensitive adhesive.

30 67. The fastener tab of claim 47 wherein the body is formed of a thermoplastic synthetic resin.

69. The fastener tab of claim 68 wherein the resin comprises polypropylene.

70. A roll of fastener tabs joined side-to-side, each fastener tab comprising
a strip form, unitary body consisting essentially of a contiguous resin, the
5 body having a first end and a second end, hooks in a first end region, and two opposable legs
in a second end region spaced apart from the hooks for mounting the fastener tab to opposite
sides of a substrate

71. The roll of fastener tabs of claim 70, wherein the two opposable legs are stored in
10 a flat, open position.

72. The roll of fastener tabs of claim 71, wherein each of the two opposed legs has an
inner facing surface including an adhesive.

15 73. The roll of fastener tabs of claim 72, wherein the strip form unitary body further
comprises a release liner covering the adhesive.

74. The roll of fastener tabs of claim 72, wherein the body of each tab has projections
extending from a surface opposite the adhesive and arranged to be engaged by the adhesive
20 of an overlapping layer of the roll, to limit inter-tab adhesion.

75. The roll of fastener tabs of claim 72, wherein the body of each tab has a silicone
coating on a surface opposite the adhesive and arranged to be engaged by the adhesive of an
overlapping layer of the roll, to limit inter-tab adhesion.